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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/002,570	11/01/2001	Qiang Cao	25-3-10	4228

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Docket Administrator (Room 3J-219)
Lucent Technologies Inc.
101 Crawfords Corner Road
Holmdel, NJ 07733-3030

EXAMINER

HAILE, FEBEN

ART UNIT	PAPER NUMBER
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2663

DATE MAILED: 02/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/002,570

Applicant(s)

CAO ET AL.

Examiner

Feben M. Haile

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-5, 8-9, 11-15, 17, 20, 22-26 is/are rejected.
- 7) ☒ Claim(s) 2, 6, 7, 10, 16, 18, 19 and 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. In view of applicant's amendment filed November 25, 2005, the status of the application is still pending with reference to claims 1-26.

2. The amendment filed is sufficient to overcome the rejection of claims 1-26 based upon:

Regarding claims 1-5, 7, and 15-22, the present application was not co-extensive in scope with the cited application.

Regarding claims 6, 8-14, and 23-26, a terminal disclaimer in compliance with 37 CFR 1.130(b) was filed.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claim 26 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Data structures, i.e. implementation software, not claimed as embodied on a computer-readable medium are descriptive material and are not capable of causing function change. Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 15, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ehrstedt et al. (US 6,901,065), hereinafter referred to as Ehrstedt, in view of Sarkkinen et al. (US 6,950,420), hereinafter referred to as Sarkkinen.

Regarding claims 1 and 15, Ehrstedt discloses receiving quality of service requirements of each data flow comprising protocol data units (PDU) (**column 2 lines 34-40; different Quality of Services are assigned to packets, i.e. MAC-PDUs, corresponding to a particular Radio Access Bearer**), determining a priority order of the protocol data units (PDU) to be served for data transmission on a communication channel (**column 2 lines 27-29; scheduling of MAC-PDUs for transmission over a air interface**), with regard to the defined priority order and in dependent upon allocated radio resource constraints (**column 2 lines 40-42; priorities are determined on the basis of Radio Access Bearer parameters**).

Ehrstedt fails to teach serving the protocol data units (PDU) by dynamically creating transport block sets (TBS) to be transmitted to the physical layer (PHY-layer).

Sarkkinen discloses a medium access control that sends a PDU to a physical layer in the form of a transport block set (**column 6 lines 62-65**).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the method of the medium access control taught by Sarkkinen into Ehrstedt's MAC entity. The motivation for such a modification being an added flexibility in using a transparent Radio Link Control mode.

Regarding claim 23, Ehrstedt discloses a UMTs-system (column 1 lines 9-10;scheduling of packets for transmission over an air interface of a UMTS network).

5. Claims 3 and 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ehrstedt et al. (US 6,901,065), hereinafter referred to as Ehrstedt, in view of Sarkkinen et al. (US 6,950,420), hereinafter referred to as Sarkkinen, in view of Dulin et al. (US 6,567,387), hereinafter referred to as Dulin.

Regarding claim 3, Ehrstedt as modified by Sarkkinen disclose the limitations of the base claim.

Ehrstedt, Sarkkinen, or their combination fail to teach wherein the serving of the protocol data units (PDU) is performed periodically within scheduling intervals and depends on bandwidth, timing and/or power constraints.

Dulin discloses a scheduler unit determining a schedule for the transmission of protocol data units (column 2 lines 63-65) by taking into consideration bandwidth constraints (column 15 lines 10-13).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the method of the scheduler unit taught by Dulin into

the scheduling entity taught by Ehrstedt as modified by Sarkkinen. The motivation for such a modification being spatial multiplexing and communication diversity.

Regarding claim 11, Ehrstedt as modified by Sarkkinen disclose the limitations of the base claim.

Ehrstedt, Sarkkinen, or their combination fail to teach wherein a single protocol data unit (PDU) is spread over several scheduling intervals.

Dulin discloses receiving a protocol data unit, sub-dividing the protocol data unit into sub-protocol data units, and transmitting them according to a schedule (**column 3 lines 44-49**).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the method of the scheduler unit taught by Dulin into the scheduling entity taught by Ehrstedt as modified by Sarkkinen. The motivation for such a modification being spatial multiplexing and communication diversity.

6. Claims 4-5 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ehrstedt et al. (US 6,901,065), hereinafter referred to as Ehrstedt, in view of Sarkkinen et al. (US 6,950,420), hereinafter referred to as Sarkkinen, in view of Feder et al. (US 2005/0239491), hereinafter referred to as Feder.

Regarding claims 4 and 17, Ehrstedt as modified by Sarkkinen disclose the limitations of the base claim.

Ehrstedt, Sarkkinen, or their combination fail to teach the adjusting of the transmission power required for a user equipment.

Feder discloses a power control system used in adjusting the transmit power of a wireless transmitter (**page 5 column 0032**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the power control system taught by Feder into the MAC entity taught by Ehrstedt as modified by Sarkkinen. The motivation for such a modification being an improved method for controlling power.

Regarding claim 5, Ehrstedt as modified by Sarkkinen disclose the limitations of the base claim.

Ehrstedt, Sarkkinen, or their combination fail to teach an initial adjustment step using predefined bit-error-rate requirements and interference to pathloss rate estimation.

Feder discloses a power control system setting thresholds, such as signal strength, system interference, and BER, when adjusting the transmit power of a wireless transmitter (**page 5 column 0032**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the power control system taught by Feder into the MAC entity taught by Ehrstedt as modified by Sarkkinen. The motivation for such a modification being an improved method for controlling power.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ehrstedt et al. (US 6,901,065), hereinafter referred to as Ehrstedt, in view of Sarkkinen et al. (US

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6,950,420), hereinafter referred to as Sarkkinen, in view of Le-Ngoc (US 6,714,551), hereinafter referred to as Le-Ngoc.

Regarding claim 8, Ehrstedt as modified by Sarkkinen disclose the limitations of the base claim.

Ehrstedt, Sarkkinen, or their combination fail to teach adjusting the bit error rate (BER) of the communication channel below a maximum bit error rate.

Le-Ngoc discloses a method of a node setting its transmission power level such that the bit error rate will be below a maximum predetermined level (**column 11 lines 48-58**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the monitoring and controlling procedure taught by Feder into the MAC entity taught by Ehrstedt as modified by Sarkkinen. The motivation for such a modification being reducing interference between wireless communication links operating in the same geographical area.

8. Claims 9 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ehrstedt et al. (US 6,901,065), hereinafter referred to as Ehrstedt, in view of Sarkkinen et al. (US 6,950,420), hereinafter referred to as Sarkkinen, in view of Hamalainen et al. (US 6,570,860), hereinafter referred to as Hamalainen.

Regarding claims 9 and 20, Ehrstedt as modified by Sarkkinen disclose the limitations of the base claim.

Ehrstedt, Sarkkinen, or their combination fail to teach ensuring a minimum data transmission rate (R_{bmin}) and /or maximum data transmission rate (R_{bmax}) for a user equipment.

Hamalainen discloses a mobile station starting a connection by transmitting to a communication network the minimum and maximum requirements for a user data transfer rate (**column 2 lines 57-60**).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the method taught by Hamalainen into the MAC entity taught by Ehrstedt as modified by Sarkkinen. The motivation for such a modification being to relieve the problems caused by capacity restrictions in a mobile communication network that employs the multi-slot access technique in data transmissions.

9. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ehrstedt et al. (US 6,901,065), hereinafter referred to as Ehrstedt, in view of Sarkkinen et al. (US 6,950,420), hereinafter referred to as Sarkkinen, in view of Love et al. (US 2001/0040877), hereinafter referred to as Love.

Regarding claims 12, Ehrstedt as modified by Sarkkinen disclose the limitations of the base claim.

Ehrstedt, Sarkkinen, or their combination fail to teach scheduling data flows on a downlink shared channel of a UMTs-system.

Love discloses a communications system with layer structures similar to that of a UMTS network (**page 2 paragraph 0020**) that does scheduling for a common shared channel using measurements provided by mobile units (**page 2 paragraph 0025**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of scheduling taught by Love into the scheduling entity taught by Ehrstedt as modified by Sarkkinen. The motivation for such a modification being an improved method for dynamic scheduling via channel quality feedback.

Regarding claim 13, Ehrstedt as modified by Sarkkinen disclose the limitations of the base claim.

Ehrstedt, Sarkkinen, or their combination fail to teach scheduling data flows for different users on a dedicated channel in downlink direction of a UMTs-system.

Love discloses a communications system with layer structures similar to that of a UMTS network (**page 2 paragraph 0020**) that does scheduling using measurements provided by mobile units for a forward dedicated control channel (**page 2 paragraph 0026**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of scheduling taught by Love into the scheduling entity taught by Ehrstedt as modified by Sarkkinen. The motivation for such a modification being an improved method for dynamic scheduling via channel quality feedback.

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10. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ehrstedt et al. (US 6,901,065), hereinafter referred to as Ehrstedt, in view of Sarkkinen et al. (US 6,950,420), hereinafter referred to as Sarkkinen, in view of Lintulampi et al. (US 6,747,962), hereinafter referred to as Lintulampi.

Regarding claim 14, Ehrstedt as modified by Sarkkinen disclose the limitations of the base claim.

Ehrstedt, Sarkkinen, or their combination fail to teach scheduling data flows for a single user in an uplink direction of a UMTs-system.

Lintulampi discloses a UMTS with a data connection between a mobile station and a support node (**column 1 lines 4547**) where a network schedules all uplink flows per mobile station (**column 2 lines 58-60**).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the scheduling method taught by Lintulampi into the scheduling entity taught by Ehrstedt as modified by Sarkkinen. The motivation being to increase the flexibility of uplink resource allocation for a mobile station.

11. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ehrstedt et al. (US 6,901,065), hereinafter referred to as Ehrstedt, in view of Sarkkinen et al. (US 6,950,420), hereinafter referred to as Sarkkinen, in view of Westerberg et al. (US 6,236,656), hereinafter referred to as Westerberg.

Regarding claim 22, Ehrstedt as modified by Sarkkinen disclose the limitations of the base claim.

Ehrstedt, Sarkkinen, or their combination fail to teach two linked schedulers operating on the Logical-Link-control-layer and on the Medium- Access-control-Layer, respectively.

Westerberg discloses a Switching System (LLC layer) connected to a Base Station System (MAC layer) including scheduling functions (**figure 2 and column 1 lines 64-67**).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the linked based scheduling method taught by Westerberg into the scheduling entity taught by Ehrstedt as modified by Sarkkinen. The motivation for such a modification being quality of service related improvements.

12. Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ehrstedt et al. (US 6,901,065), hereinafter referred to as Ehrstedt, in view of Sarkkinen et al. (US 6,950,420), hereinafter referred to as Sarkkinen, in view of Cudak et rejected under the judicially created doctrine of al. (US 6,801,512), hereinafter referred to as Cudak.

Regarding claim 24, Ehrstedt as modified by Sarkkinen disclose the limitations of the base claim. Ehrstedt further discloses a BTS (**column 1 lines 51-52**).

Ehrstedt, Sarkkinen, or their combination fail to teach fails a transceiver unit.

Cudak discloses a base transceiver station BTS comprising a transceiver (**figure 16 unit 1602 and column 10 line 36**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the transceiver taught by Cudak into the BTS taught by Ehrstedt as modified by Sarkkinen. The motivation for such a modification being to enhance the BTS by allowing it to transmit and receive information.

Regarding claim 25, Ehrstedt as modified by Sarkkinen disclose the limitations of the base claim. Ehrstedt discloses a mobile terminal (**column 1 lines 51-52**).

Ehrstedt, Sarkkinen, or their combination fail to teach a transceiver unit.

Cudak discloses a mobile station MS comprising a transceiver (**figure 17 unit 1702 and column 11 line 3**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the transceiver taught by Cudak into the BTS taught by Ehrstedt as modified by Sarkkinen. The motivation for such a modification being to enhance the BTS by allowing it to transmit and receive information.

Regarding claim 26, Ehrstedt as modified by Sarkkinen disclose the limitations of the base claim.

Ehrstedt, Sarkkinen, or their combination fail to teach implementation software for performing a method.

Cudak discloses a scheduler program (**column 10 lines 46-47**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the scheduling program taught by Cudak into the scheduling entity taught by Ehrstedt as modified by Sarkkinen. The motivation for such a modification being a scheduling architecture that eliminates backhaul delay.

Allowable Subject Matter

13. Claims 2, 6-7, 10, 16, 18-19, and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. The indicated allowability of claims 8 and 11 is withdrawn in view of the newly discovered reference(s). Rejections based on the newly cited reference(s) can be found above.

Response to Arguments

15. Applicant's arguments, see pages 7-9, filed November 25, 2005, with respect to the rejection(s) of claim(s) 1-5, 7, and 15-22 under statutory type 35 U.S.C. 101 and claims 6, 9, 12-14, and 23-26 under nonstatutory type 35 U.S.C. 101 have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made (see above).

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

a) Yi et al. (US 20040105402), Method for Scheduling Transmission of MBMS Data in UMTS

b) Liu et al. (US 20040160936), Method of Scheduling on Downlink and Transmitting on Uplink Dedicated Channels

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17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Feben M. Haile whose telephone number is (571) 272-3072. The examiner can normally be reached on 6:00am - 3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ft 02/16/2006


RICKY Q. NGO
SUPERVISORY PATENT EXAMINER